



**IN THE UNITED STATES PATENT & TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of

**NORMAN R. PELTON**

Serial No.: 09/738,766

Art Unit: 3643

Filed: 12/18/2000

Examiner: Andrea M. Valenti

For: **TREE SEEDLING PLUG AND METHOD OF MAKING SAME**

**APPEAL BRIEF**

This is an appeal from the Final Rejection mailed November 30, 2004. A Notice of Appeal was filed May 31, 2005 and accordingly the term to file the Appeal Brief expired July 31, 2005. A Petition for a four-month extension of time is filed herewith. The Appeal Brief is filed in triplicate and the accompanying cheque includes the small entity filing fee of \$250 and extension fee of \$795.

**Real party in interest**

The subject application is owned by Pelton Reforestation Ltd.

**Related appeals and interferences**

There are no related appeals or interferences.

**Status of claims**

On May 31, 2005 the appellant appealed from the final rejection of claims

10, 12-14, 22-25 and 27-33. Claims 1-5, 11, 15-21 and 26 have been cancelled.

### **Status of amendments**

No amendment has been made subsequent to the Examiner's Final Office Action mailed November 30, 2004.

### **Summary of claimed subject matter**

The independent claims involved in the appeal are claims 6, 8 and 9. Each is directed to a method of forming a coniferous tree seedling plug (Fig. 3-7) for use in re-planting coniferous forests: Claim 6 to a method of making the coniferous tree seedling plug shown in Fig. 7; Claim 8 to a method of making the coniferous tree seedling plug shown in Fig. 6; and Claim 9 to a method of making the coniferous tree seedling plug shown in Fig. 6.

Claim 6 is directed to a method of forming a coniferous tree seedling plug (60, Fig. 7) for use in re-planting coniferous forests comprising:

- i) filling a hollow cell (16, Fig. 1) with a growing medium wherein the growing medium comprises a plurality of thermal-sensitive fibres (p. 6, lines 23-26; p. 5 lines 3-13);
- ii) heat-treating the thermal-sensitive fibres to form an interconnected fibrous network within the growing medium (p. 6, lines 23-26; p. 5 lines 3-13);
- iii) planting a coniferous tree seed in the hollow cell (p. 6, line 26);
- iv) germinating said coniferous tree seed into a seedling and nurturing the seedling to provide root development (p. 6, lines 26-28);
- v) after less than 7 months and sufficient root development of the seedling has occurred ejecting the seedling and growing medium from the hollow cell to

form the coniferous tree seedling plug (p. 6, lines 26-29; p. 7 lines 1-3; p. 2 lines 11-13); and

vi) packing the coniferous tree seedling plug for use in re-planting coniferous forests (p. 6, lines 28-29).

Claim 8 is directed to a method of forming a coniferous tree seedling plug (50, Fig. 6) for use in re-planting coniferous forests, the method comprising the steps of:

i) forming a first generally cylindrical plug (24, Fig. 3) of a first growing medium wherein the first growing medium comprises a network of thermal-sensitive fibre, by

a) filling a first hollow cell (14, Fig. 2) with a growing medium wherein the growing medium comprises a plurality of thermal-sensitive fibres (p. 5, lines 3-7);

b) heat-treating the thermal-sensitive fibres to form an interconnected fibrous network within the growing medium (p. 5, lines 8-13);

c) planting a coniferous tree seed in the first hollow cell (p. 5, line 14);

d) germinating the coniferous tree seed into a seedling and nurturing the seedling to provide root development (p. 5, line 16-17);

e) after sufficient root development of the seedling has occurred ejecting the seedling and growing medium from the first hollow cell to form the first generally cylindrical plug (p. 5, lines 16-27);

ii) transplanting the first generally cylindrical plug into a second hollow cell with a second growing medium wherein the second growing medium comprises a plurality of thermal-sensitive fibres which have been heat-treated to form an interconnected fibrous network (p. 6, lines 10-17);

iii) after less than 7 months and sufficient root development of the seedling has occurred, ejecting the seedling and the first and second growing media from the second hollow cell to form the coniferous tree seedling plug (p. 5 lines 19-

29; p. 6, lines 3-9; p. 2 lines 11-13); and

iv) packing the coniferous tree seedling plug for use in re-planting coniferous forests (p. 6, lines 5-6).

Claim 9 is directed to a method of forming a coniferous tree seedling plug (50, Fig. 6) for use in re-planting coniferous forests, the method comprising the steps of:

i) forming a first generally cylindrical plug (24, Fig. 3) of a first growing medium wherein the first growing medium comprises a network of thermal-sensitive fibre, by

a) filling a first hollow cell (14, Fig. 2) with a growing medium wherein the growing medium comprises a plurality of thermal-sensitive fibres (p. 5, lines 3-7);

b) heat-treating the thermal-sensitive fibres to form an interconnected fibrous network within the growing medium (p. 5, lines 8-13);

c) planting a coniferous tree seed in the first hollow cell (p. 5, line 14);

d) germinating the coniferous tree seed into a seedling and nurturing the seedling to provide root development (p. 5, line 16-17);

e) after sufficient root development of the seedling has occurred, ejecting the seedling and growing medium from the first hollow cell to form the first cylindrical plug (p. 5, lines 16-27);

ii) transplanting the first generally cylindrical plug into a second hollow cell with a growing medium wherein the growing medium comprises a second growing medium (p. 5 line 27 - page 6 line 1);

iii) after less than 7 months and sufficient root development of the seedling has occurred, ejecting the seedling and the first and second

growing media from the second hollow cell to form the coniferous tree seedling plug (p. 5 lines 19-29; p. 6, lines 3-9; p. 2 lines 11-13); and iv) packing the coniferous tree seedling plug for use in re-planting coniferous forests (p. 6, lines 5-6).

### **Grounds of rejection to be reviewed on appeal**

The following grounds of rejection in the Office Action mailed 11/30/2004 are to be reviewed:

- i) The Examiner rejected claims 6 and 27-29 under 35 U.S.C. s. 103(a) as unpatentable over Van der Knaap B.V. Fibre Neth and Substrate Research for Roses: Evaluation of Different Types of Coir, Verbodsnieuws vol. 43 (20): English Abstract, Dutch 1999, one page (“Van der Knaap”) in view of U.S. Patent no. 3,990,180 to Bunting; U.S. Patent No. 4,333,265 to Arnold and U.S. Patent Des. 325, 714 to Karhiniemi.
- ii) The Examiner rejected claims 8, 9, 12-14, 22-25, 30 and 31 under 35 U.S.C. s. 103(a) as unpatentable over Van der Knaap and Substrate Research for Roses: Evaluation of Different Types of Coir in view of U.S. Patent no. 3,990,180 to Bunting; U.S. Patent No. 4,333,265 to Arnold and U.S. Patent Des. 325, 714 to Karhiniemi as applied to claim 6 and further in view of U.S. patent No. 5,331,908 to Loeb.

### **Argument**

As stated at page 1 of the disclosure, lines 10-31 and page 2, lines 1-17, reforestation of coniferous forests is typically accomplished by tree planting by hand. Tree planters, on foot and carrying a supply of tree seedlings, form holes in

the soil and insert a tree seedling into the hole, and the soil is pressed around the roots of the seedling by the planter. Due to the nature of coniferous forests, such re-planting is often carried out on rugged terrain, in difficult soil conditions. Also, such forests are typically in a northern climate with a short growing season. There is therefore a short window during which the re-planting of seedlings has the maximum chance for success, when the soil is sufficiently warm and moist with a long enough season remaining for the roots of the seedling to develop enough for survival. Bare root replanting of tree seedlings has a high failure rate, since the soil into which the seedling is planted may have been overly harsh, cold or dry and the seedling roots may not have time to develop adequately in a short growing season. Consequently a method of growing seedlings in a soil plug called "styrobloc plugs" was developed. According to that method, styrofoam trays or blocks having an array of cylindrical cavities are used. The cavities are filled with a loose growing soil mixture consisting of peat moss, sawdust and additives covered with loose sand. Generally two tree seeds are placed in each cavity in case one fails to germinate. The trays are then placed in a greenhouse for the seed to germinate in warmth and light. After about 7 months the roots of the seedling have sufficiently developed to hold the growing medium together, forming a plug. At that point the seedlings are ejected from the styrofoam blocks and wrapped and packed for shipping or storage.

The problem with the existing styrobloc plug method is that roots of seedlings which have sufficiently developed in the cavity to retain the growing medium are not ideally configured for replanting as they form a ball which is unstable when replanted, and the growing seedling may be blown over in the wind. It is preferable to have the seedling roots develop naturally by penetrating into the upper layers of humus. Further, a long growing time is required to allow the seedling roots to develop according to this method, typically a minimum 7 months. Generally the seedlings will be planted in January and shipped in July. Thus the prior art method, by taking too long to develop the seedling, does not permit sufficient flexibility to

allow planting at the most favourable times. The claimed method allows a shorter development period which permits transplanting at an earlier stage of development of the seedling root system, and avoids balling of the roots .

**i) Rejection of claims 6 and 27-29 under 35 U.S.C. s. 103(a)**

The Examiner combines four references in rejecting this group of claims as obvious over Van der Knaap B.V. Fibre Neth and Substrate Research for Roses: Evaluation of Different Types of Coir, Verbondsnieuws vol. 43 (20): English Abstract, Dutch 1999, one page (“Van der Knaap”). The Examiner has erroneously grouped claims 28 and 29 (which depend from claims 8 and 9) in this group and has erroneously omitted claims 13 and 14, which depend from claim 6, from this group.

Van der Knaap discloses that a soil mixture consisting of coconut coir and thermal-sensitive fibre has been used in the greenhouse cultivation of roses. U.S. Patent no. 3,990,180 to Bunting discloses plug-shaped containers made of peat for containing a seed or seedling which are pre-shaped and reacted using heat and pressure. The use of thermal-sensitive fibres is not disclosed in Bunting. Rather the application of heat and pressure in this reference is in order to bind the peat particles together by polymerization into a plug which is sufficiently strong to avoid falling apart when wetted, and to permit mechanical planting (Column 5, line 1-14). U.S. Patent Des. 325, 714 to Karhiniemi discloses a tray for growing seedlings. U.S. Patent No. 4,333,265 to Arnold discloses an air drop planting system for planting seedlings in which the seedlings are packaged in conical, aerodynamically stable bodies which drive into the earth when dropped from helicopters. The Examiner relies on this reference for the proposition that a six month growing period for seedlings is conventional.

The Examiner states in the Final Office Action that, “It would have been

obvious to one of ordinary skill in the art to shape the growing medium of Van der Knaap's into a seedling plug since the modification is merely the selection of a known [sic] material for intended use selected for its known hydration characteristics. Van der Knaap is silent on how the plug is manufactured. However, Bunting teaches that it is old and [sic] notoriously well-known in the art to manufacture plugs using thermal heat-treatment for its polymerization effects (Bunting Col. 2 line 40-55 and claim 9). It would have been obvious to one of ordinary skill in the art to modify the teachings of Van der Knaap since the modification is merely the selection of a known manufacturing procedure selected for desired [sic] known polymerization end results to enhance root expansion through the plug. Van der Knaap as modified is silent on a hollow cell. However, Karhiniemi teaches a tray for growing seedlings in which the application of the tray inherently performs the conventional method of forming a seedling plug by filling a hollow cell with a growing medium planting [sic] a tree seed in the hollow cell; germinating the seed into a seedling and nurturing the seedling to provide root development; after sufficient root development of [sic] the seedling, ejecting the seedling and growing medium to form a plug (Karhiniemi Fig. 1-5). It would have been obvious to one of ordinary skill in the art to modify the teachings of Van der Knaap [sic] with the teachings of Karhiniemi as an ergonomically efficient means of transporting multiple plugs at one time. Van der Knaap as modified is silent on the age of the seedling being 6.5 months or less [sic]. However, Arnold teaches that it is accepted wisdom in the field that seedlings under conventional methods reach an acceptable size at 6 months (Arnold Col. 10 line 8) ...”

It is submitted that the cited references cannot be combined to arrive at the claimed invention as maintained by the Examiner. The method claimed in claim 6 involves filling a hollow cell with a growing medium wherein the growing medium comprises a plurality of thermal-sensitive fibres, heat-treating the thermal-sensitive fibres to form an interconnected fibrous network within the growing medium, and



planting a coniferous tree seed in the hollow cell. The use of thermal-sensitive fibres is not disclosed in Bunting, nor is the use of a hollow cell. Rather the application of heat and pressure in Bunting is in order to polymerize the peat particles together into a plug which is sufficiently strong to avoid falling apart when wetted, and to permit mechanical planting (Column 5, line 1-14). Contrary to the Examiner's assertion, there is no polymerization involved in the claimed heat-treating of the thermal-sensitive fibres to form an interconnected fibrous network within the growing medium. Merely substituting the thermal-sensitive fibres of Van der Knaap for the peat moss in Bunting would not arrive at the claimed invention since the heat treatment required to polymerize the peat into a solid mass in Bunting (250 degrees F for one hour under pressure – see Examples 1-11, columns 5-8) is clearly not suitable for forming the claimed interconnected fibrous network within the growing medium, which requires dipping the tray of hollow cells in a bath of hot water at a temperature of approximately 89 degrees Celsius, and then dipping the tray in a bath of water at tap water temperature, 5 to 10 degrees Celsius (see claims 13, 14) to set the fibrous network. Nor would the method of forming plugs disclosed in Bunting be applicable to the slotted tray shown in Karhiniemi since Bunting requires pressing a pre-shaped mass of natural peat at pressures ranging from about 5 pounds per square inch (psig) to about 4000 psig (column 2, lines 51-52) which would result in material being forced through the slots in the Karhiniemi tray. Thus Bunting's method of forming solid peat plugs could not be combined with Van der Knaap and Karhiniemi to arrive at the claimed method without modifying Bunting in a way which would not have been obvious to one skilled in the art of manufacturing seedling plugs .

**ii) Rejection of claims 8, 9, 12-14, 22-25, 30 and 31 under 35 U.S.C. s. 103(a)**

In rejecting this group of claims, the Examiner combines the four references as applied to claim 6, Van der Knaap in view of Bunting, Arnold and Karhiniemi

and further in view of U.S. patent No. 5,331,908 to Loeb. The Examiner has erroneously grouped claims 13 and 14 (which depend from claim 6) in this group and has erroneously omitted claims 28 and 29 (which depend from claims 8 and 9) from this group.


Loeb discloses a method of growing perennials (as defined at column 2 lines 38-48, and which does not specifically include trees or coniferous trees) in which a starter plant is planted in a suitable growing medium in a container 18 such as a pot with an open bottom (column 4, lines 6-25). The plant is then allowed to grow in the container until sufficiently developed after which the plant is planted in a field along with the container, with the top rim of the container even with the soil level (column 4, lines 36-56).

In addition to the arguments put forth above in support of claims 6, it is further submitted in respect of claims 8 and 9 that even if the person skilled in the art were to combine the teachings of Van der Knaap, Bunting, Arnold, Karhiniemi and Loeb, one would still not be led to the claimed invention, in that Loeb teaches away from the claimed invention. Loeb teaches that the plant is not ejected from the second hollow cell filled with growing medium (container 18) once the roots are sufficiently developed, for packing and replanting, but rather the plant is replanted in a field without removing it from container 18 and grows into a full size plant within container 18 (column 4, lines 51-58). Reforestation by replanting of coniferous tree seedlings in a plant pot would clearly not be useful, which reflects the different considerations in growing perennials as compared to the replanting of coniferous trees. Further the person skilled in the art would not be motivated to combine Loeb, which is directed to cultivation of perennials wherein the plant grows within a container such as a pot which can be planted in the field and harvested with the plant, with Bunting which is directed to pre-shaped peat containers which comprise a mass of peat containing the seedling which can be planted without any further container.

## Summary

The appellant submits for the foregoing reasons that the Examiner's rejections of independent claims 6, 8 and 9 were erroneous and reversal of such rejection is respectfully requested. As dependent claims 7, 10, 12-14, 22-25 and 27-33 were rejected similarly on obviousness grounds, but such claims depend from patentable claims 6, 8 and 9, it is submitted that such dependent claims are similarly patentable and reversal of such rejections is also respectfully requested.

Respectfully submitted,

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## **Claims Appendix**

6. A method of forming a coniferous tree seedling plug for use in re-planting coniferous forests comprising:

- i) filling a hollow cell with a growing medium wherein said growing medium comprises a plurality of thermal-sensitive fibres;
- ii) heat-treating said thermal-sensitive fibres to form an interconnected fibrous network within said growing medium;
- iii) planting a coniferous tree seed in said hollow cell;
- iv) germinating said coniferous tree seed into a seedling and nurturing said seedling to provide root development;
- v) after less than 7 months and sufficient root development of said seedling has occurred, ejecting said seedling and growing medium from said hollow cell to form said coniferous tree seedling plug; and
- vi) packing said coniferous tree seedling plug for use in re-planting coniferous forests.

7. The method of claim 6 wherein said growing medium comprises a loose growing soil mixture consisting of approximately 95% by weight coconut coir fibre, and 5% by weight of thermal-sensitive fibre.

8. A method of forming a coniferous tree seedling plug for use in re-planting coniferous forests comprising:

- i) forming a first generally cylindrical plug of a first growing medium wherein said first growing medium comprises a network of thermal-sensitive fibre, by
  - a) filling a first hollow cell with a growing medium wherein said growing medium comprises a plurality of thermal-sensitive fibres;
  - b) heat-treating said thermal-sensitive fibres to form an interconnected fibrous network within said growing medium;
  - c) planting a coniferous tree seed in said first hollow cell;
  - d) germinating said coniferous tree seed into a seedling and nurturing said seedling to provide root development;
  - e) after sufficient root development of said seedling has occurred, ejecting said seedling and growing medium from said first hollow cell to form said first generally cylindrical plug;
- ii) transplanting said first generally cylindrical plug into a second hollow cell with a second growing medium wherein said second growing medium comprises a plurality of thermal-sensitive fibres which have been heat-treated to form an interconnected fibrous network;
- iii) after less than 7 months and sufficient root development of said

seedling has occurred, ejecting said seedling and said first and second growing media from said second hollow cell to form said coniferous tree seedling plug; and  
iv) packing said coniferous tree seedling plug for use in re-planting coniferous forests.

9. A method of forming a coniferous tree seedling plug for use in re-planting coniferous forests comprising:

- i) forming a first generally cylindrical plug of a first growing medium wherein said first growing medium comprises a network of thermal-sensitive fibre, by
  - a) filling a first hollow cell with a growing medium wherein said growing medium comprises a plurality of thermal-sensitive fibres;
  - b) heat-treating said thermal-sensitive fibres to form an interconnected fibrous network within said growing medium;
  - c) planting a coniferous tree seed in said first hollow cell;
  - d) germinating said coniferous tree seed into a seedling and nurturing said seedling to provide root development;
  - e) after sufficient root development of said seedling has occurred, ejecting said seedling and growing medium from said first hollow cell to form said first cylindrical plug;
- ii) transplanting said first generally cylindrical plug into a second hollow cell with a growing medium wherein said growing medium comprises a second growing medium;
- iii) after less than 7 months and sufficient root development of said seedling has occurred, ejecting said seedling and said first and second growing media from said second hollow cell to form said coniferous tree seedling plug; and
- iv) packing said coniferous tree seedling plug for use in re-planting coniferous forests.

10. The method of claim 8 wherein said first growing medium comprises a loose growing soil mixture consisting of approximately 95% by weight coconut coir fibre, and 5% by weight of thermal-sensitive fibre.

12. The method of claim 9 wherein said second growing medium comprises a loose growing soil mixture comprising peat moss and sawdust.

13. The method of claim 6 wherein said growing medium comprising a network of thermal-sensitive fibre is formed by filling a tray of hollow cells with said growing medium, dipping said tray in a bath of hot water at a temperature of approximately 89 degrees Celsius, and then dipping said tray in a bath of water at tap water temperature, 5 to 10 degrees Celsius.

14. The method of claim 6 wherein said growing medium comprising a network of thermal-sensitive fibre is formed by filling a tray of hollow cells with said growing medium, and alternatively cascading water onto the tray to heat and cool the tray.
22. The method of claim 8 wherein said first and second growing media comprising a network of thermal-sensitive fibre are formed by filling a tray of hollow cells with one of said growing media, dipping said tray in a bath of hot water at a temperature of approximately 89 degrees Celsius, and then dipping said tray in a bath of water at tap water temperature, 5 to 10 degrees Celsius.
23. The method of claim 8 wherein said first and second growing media comprising a network of thermal-sensitive fibre are formed by filling a tray of hollow cells with one of said growing media, and alternatively cascading water onto the tray to heat and cool the tray.
24. The method of claim 9 wherein said first growing medium comprising a network of thermal-sensitive fibre is formed by filling a tray of hollow cells with said growing medium, dipping said tray in a bath of hot water at a temperature of approximately 89 degrees Celsius, and then dipping said tray in a bath of water at tap water temperature, 5 to 10 degrees Celsius.
25. The method of claim 9 wherein said first growing medium comprising a network of thermal-sensitive fibre is formed by filling a tray of hollow cells with said growing medium, and alternatively cascading water onto the tray to heat and cool the tray.
27. The method of claim 6 wherein said seedling and growing medium are ejected from said hollow cell after 6 months or less.
28. The method of claim 8 wherein said seedling and said first and second growing media are ejected from said second hollow cell after 6 months or less.
29. The method of claim 9 wherein said seedling and said first and second growing media are ejected from said second hollow cell after 6 months or less.
30. The method of claim 8 wherein said seedling and said first growing medium are ejected from said first hollow cell after between 6 and 12 weeks.
31. The method of claim 9 wherein said seedling and said first growing medium are ejected from said first hollow cell after between 6 and 12 weeks.
32. The method of claim 9 wherein said first growing medium comprises a loose

growing soil mixture consisting of approximately 95% by weight coconut coir fibre, and 5% by weight of thermal-sensitive fibre.

33. The method of claim 8 wherein said second growing medium comprises a loose growing soil mixture consisting of approximately 95% by weight coconut coir fibre, and 5% by weight of thermal-sensitive fibre.